

REMARKS

Claims 54-64 and 75-85 are pending in the application and stand rejected. No claim amendments are offered. Claims 54-64 and 75-85 remain pending.

REJECTIONS UNDER 35 U.S.C. § 103

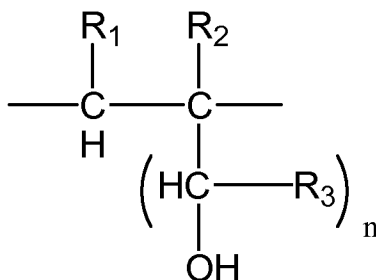
Claims 54-56, 60-62, 64, 75-79, 83, and 85 are rejected under 35 U.S.C. § 103(a) as obvious over the Bonk reference (U.S. Pat. No. 6,203,868) in view of the Famili reference (EP 0466057). Applicants respectfully traverse the rejection and request reconsideration.

Novel claims are patentable over a combination of references unless the differences between the subject matter of the claims and the disclosure of the combined references are such that the subject matter as a whole would have been obvious to one having ordinary skill in the art. The differences between the rejected claims and the combined references must be carefully analyzed to guard against the natural human tendency to interpret the teaching of the references with the benefit of Applicant's description of the claimed subject matter in his specification. The outstanding rejections will now be discussed with these principles in mind.

The rejected claims recite a shoe that contains an inflatable membrane; the membrane is a multilayer composite with a low gel sheet formed from a blend of thermoplastic urethane (TPU), certain hydroxyl functional copolymers, and a gel reducing additive. Essentially, the primary reference discloses a shoe without the gel reducing additive and with only an ethylene/vinyl alcohol copolymer, while the secondary reference discloses blends of tpu, polyvinyl alcohol, and a "plasticizer." The Examiner holds that it would be obvious to use the plasticizer of Famili in the shoe of Bonk and rejects the claims over the combined references. But, as developed below, the system of Famili is so different from that of Bonk (and the claims) that a person of skill in the art would not have been led to make that substitution, unless guided by the current specification.

Significantly and in contrast to any teaching in the applied references, the hydroxyl functional copolymer is selected from

"a) a polymer having 10 mole percent or more of repeating units of structure



and

b) a copolymer of ethylene and vinyl alcohol with 25 – 60 mol% ethylene.”

In polymer a), n is 1, R₁ and R₂ are hydrogen, methyl, or ethyl, and R₃ is hydrogen or C₁₋₃ alkyl. A low gel sheet in the membrane is formed from a mixture of TPU, a gel reducing additive, and a copolymer a) or b).

The Famili reference is drawn exclusively to coextruded blends of TPU and polyvinyl alcohol (PVOH). It does not suggest the use of either hydroxyl functional copolymer a) or hydroxyl functional copolymer b).

In fact, the teachings of Famili are narrowly drawn to homopolymers of vinyl alcohol, with very low if any content of other comonomers. Attention is drawn to page 4, lines 1-4 of EP 0466057. There, the reference describes that “suitable equivalents” to PVOH include copolymers with 94 – 98 mol% vinyl alcohol and only 2 - 6 % by weight methyl methacrylate. Later, the Famili reference states that the PVOH may also contain up to 3 – 4 mol% of a copolymerized monomer. These “suitable equivalents” do not read on the polymers a) and b) of the claims, or the ethylene/vinyl alcohol polymers of the Bonk reference. The teachings of Famili are specifically limited to PVOH or copolymers of vinyl alcohol and minor amounts of comonomers.

The hydroxyl functional copolymers of the claims, on the other hand, contain major amounts of comonomers. For example, polymer a) has at least 10 mol% of the allyl alcohol monomer, while copolymer b) has 25 – 60 mol% comonomer ethylene. These levels are significantly higher than the maximum of 3-4% comonomer disclosed in the Famili reference. The Famili reference thus teaches against using hydroxyl functional polymers having the structures recited in the rejected claims. Famili specifically teaches to use the plasticizer in TPU blends only when the hydroxyl functional polymer is a vinyl alcohol homopolymer. This teaches away from doing what applicants have done, such that a *prima facie* case of obviousness is not properly made out.

Further, the person of skill in the art would have no motivation to adapt the teachings of Famili because of the large differences in chemical behavior between the vinyl alcohol homopolymers of the reference and the copolymers of the claims. Based on the large differences between the claimed polymers and the PVOH of the Famili reference, Applicants respectfully submit that a person of skill in the art would not have considered the subject matter as a whole obvious in light of those differences.

Copolymer a) differs from the PVOH of the Famili reference in many ways. One of the most important ways is that copolymer a) of the amended claims contains only primary hydroxyls (when R_3 is H), whereas the PVOH of the Famili reference contains only secondary hydroxyls. It is well known to persons of skill in the art that primary and secondary hydroxyls exhibit vastly different reaction profiles, which leads to different reactions from a kinetic and equilibrium point of view. The person of skill in the art would not expect the claimed polymers to behave in the same way as the PVOH homopolymers disclosed in the Famili reference.

Likewise, polymer b) - a copolymer of ethylene and vinyl alcohol with 25 to 60 mol% ethylene - is very different in structure from the disclosed PVOH homopolymers of the Famili reference. It is evident that the claimed copolymer has a very large proportion of ethylene monomer that does not contribute hydroxyl functionality to the polymer. As a result, the claimed polymer b) has much less hydroxyl functionality than the disclosed polymer. Because the hydroxyl group is key to reacting with the TPU to form gel in these systems, the person of skill in the art would not be led to believe that the claimed copolymers would act in the same way as the PVOH homopolymers of the Famili reference, and would have no apparent reason to use the Famili plasticizer in the Bonk shoe.

Although there is a natural tendency to find individual aspects of claims in separate references and to combine them to reach the subject matter of the claims, care must nevertheless be taken to avoid the trap of improper hindsight, using applicant's own description of his invention as a road map or a guide to piece together those separate teachings. Rather, the statute requires an analysis of the invention as a whole in light of the knowledge of the person of ordinary skill in the art upon reading the references.

For the reasons discussed above, the skilled person would not have combined the references with any reasonable expectation of success, and certainly would not have considered the claimed invention obvious in light of the combined references. Applicants believe that the current claims are not obvious in light of the combined Bonk and Famili references, and respectfully request the rejection be withdrawn.

Claims 57-59 and 80-82 are rejected under 35 U.S.C. § 103(a) as unpatentable over the Bonk '868 reference in view of the Famili reference and further in view of the Bonk '026 reference. The deficiency of the combined Bonk '868 and Famili references are described above. Applicants respectfully submit that the Bonk '026 reference does not make up for those deficiencies. Accordingly, Applicant respectfully request the rejection be withdrawn.

Claim 63 and 84 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonk '868 in view of the Famili reference and further in view of the Cook reference (U.S. 4,156,768). The deficiencies of Bonk '868 in view of Famili are described above. The Cook reference does not overcome those deficiencies. Accordingly, Applicants respectfully request the rejection be withdrawn.

DOUBLE PATENTING REJECTIONS

Claims 54-64 and 75-85 are provisionally rejected on the ground of non-statutory type double patenting over claims 28-54 of co-pending application 10/633,764. In the interest of expediting prosecution, Applicants reserve the right to obviate the double patenting rejection by filing a Terminal Disclaimer, once patentable subject matter in the claims is developed in light of the cited art. For now, Applicants respectfully traverse the rejection and request reconsideration.

The rejected claims are not an obvious variant of the co-pending claims. Co-pending claim 28 is reproduced here for convenience:

28. (currently amended) A bladder, comprising an elastomeric barrier membrane, wherein:

said membrane comprises a microlayer polymeric composite layer having at least about 10 microlayers, each microlayer individually being up to about 400 ~~2.5~~ microns thick, said microlayers alternating between at least one polymeric gas fluid barrier material and at least one elastomeric material;

and further wherein said microlayers of polymeric fluid barrier material comprise a laminar nano-filler having an average platelet thickness of up to about 10 nanometers, an average aspect ratio of at least about 200, and at least one of height and width being independently from about 0.1 micron to about 1.5 microns, wherein the amount of the laminar nano-filler does not appreciably decrease the resilience of the membrane.

As evident from review of claim 28, quoted above, the subject matter of the co-pending claims does not suggest the claimed shoe having an inflatable membrane with a low gel sheet formed from TPU, hydroxyl functional polymer and gel reducing additive. Based on these differences, Applicants respectfully submit a Terminal Disclaimer is not necessary to obviate the rejection. Applicants respectfully request the rejection be withdrawn.

CONCLUSION

For the reasons discussed above, Applicant believes that claims 54-64 and 75-85 are in an allowable condition and respectfully request an early Notice of Allowance. The Examiner is invited to telephone the undersigned if that would be helpful to resolve any issues.

Respectfully submitted,

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